ISIS5030.ST25.txt SEQUENCE LISTING

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Val Gln Tyr Gln Tyr Glu Pro Pro Ser Ala Pro Ser Thr Thr Phe Ser 50 60

Asn Ser Pro Ala Pro Asn Phe Leu Pro Pro Arg Pro Asp Phe Val Pro 65 75 80

Phe Pro Pro Pro Met Pro Pro Ser Ala Gln Gly Pro Leu Pro Pro Cys 85 90 95

Pro Ile Arg Pro Pro Phe Pro Asn His Gln Met Arg His Pro Phe Pro 100 105 110

Val Pro Pro Cys Phe Pro Pro Met Pro Pro Met Pro Cys Pro Asn 115 120 125

Asn Pro Pro Val Pro Gly Ala Pro Pro Gly Gln Gly Thr Phe Pro Phe 130 135 140

Met Met Pro Pro Pro Ser Met Pro His Pro Pro Pro Pro Pro Val Met 145 150 155 160

Phe Pro Pro Ser Phe Asn Ser Phe Gln Asn Asn Pro Ser Ser Phe 180 $\,$ 180 $\,$ 180 $\,$ 190 $\,$

Leu Pro Ser Ala Asn Asn Ser Ser Ser Pro His Phe Arg His Leu Pro 195 200 205

Pro Tyr Pro Leu Pro Lys Ala Pro Ser Glu Arg Arg Ser Pro Glu Arg 210 215 220

Leu Lys His Tyr Asp Asp His Arg His Arg Asp His Ser His Gly Arg 225 230 235

Gly Glu Arg His Arg Ser Leu Asp Arg Arg Glu Arg Gly Arg Ser Pro 245 250 255

Asp Arg Arg Gln Asp Ser Arg Tyr Arg Ser Asp Tyr Asp Arg Gly 260 265

Arg Thr Pro Ser Arg His Arg Ser Tyr Glu Arg Ser Arg Glu Arg Glu 275 280 285

Arg Glu Arg His Arg His Arg Asp Asn Arg Arg Ser Pro Ser Leu Glu 290 300

Arg Ser Tyr Lys Lys Glu Tyr Lys Arg Ser Gly Arg Ser Tyr Gly Leu 305 310 315 320

Ser Val Val Pro Glu Pro Ala Gly Cys Thr Pro Glu Leu Pro Gly Glu 325 330 335

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His	Arg	Ser 355	Pro	Ser	Arg	Glu	Lys 360	Lys	Arg	Ala	Arg	Trp 365	Glu	Glu	Glu
Lys	Asp 370	Arg	Trp	Ser	Asp	Asn 375	Gln	Ser	Ser	Gly	Lys 380	Asp	Lys	Asn	Tyr
Thr 385	Ser	Ile	Lys	Glu	Lys 390	Glu	Pro	Glu	Glu	Thr 395	Met	Pro	Asp	Lys	Asn 400
Glu	Glu	Glu	Glu	Glu 405	Glu	Leu	Leu	Lys	Pro 410	Val	Trp	Ile	Arg	Cys 415	Thr
His	Ser	Glu	Asn 420	Tyr	Tyr	Ser	Ser	Asp 425	Pro	Met	Asp	Gln	Val 430	Gly	Asp
Ser	Thr	Val 435	Val	Gly	Thr	Ser	Arg 440	Leu	Arg	Asp	Leu	Tyr 445	Asp	Lys	Phe
Glu	Glu 450	Glu	Leu	Gly	Ser	Arg 455	Gln	Glu	Lys	Ala	Lys 460	Ala	Ala	Arg	Pro
Pro 465	Trp	Glu	Pro	Pro	Lys 470	Thr	Lys	Leu	Asp	Glu 475	Asp	Leu	Glu	Ser	Ser 480
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Ser	Asp	Ser	Glu 500	Val	Phe	Asp	Val	Ile 505	Ala	Glu	Ile	Lys	Arg 510	Lys	Lys
Ala	His	Pro 515	Asp	Arg	Leu	His	Asp 520	Glu	Leu	Trp	Tyr	Asn 525	Asp	Pro	Gly
Gln	Met 530	Asn	Asp	Gly	Pro	Leu 535	Cys	Lys	Cys	Ser	Ala 540	Lys	Ala	Arg	Arg
Thr 545	Gly	Ile	Arg	His	Ser 550	Ile	Туг	Pro	Gly	Glu 5 5 5	Glu	Ala	Ile	Lys	Pro 560
Cys	Arg	Pro	Met	Thr 565	Asn	Asn	Ala	Gly	Arg 570	Leu	Phe	His	Tyr	Arg 575	Ile
Thr	Val	Ser	Pro 580	Pro	Thr	Asn	Phe	Leu 585	Thr	Asp	Arg	Pro	Thr 590	Val	Ile
Glu	Tyr	Asp	Asp	His	Glu	Tyr	Ile	Phe	Glu	Gly	Phe	Ser	Met	Phe	Ala

His Ala Pro Leu Thr Asn Ile Pro Leu Cys Lys Val Ile Arg Phe Asn 610 620

Ile Asp Tyr Thr Ile His Phe Ile Glu Glu Met Met Pro Glu Asn Phe 625 630 635 640

Cys Val Lys Gly Leu Glu Leu Phe Ser Leu Phe Leu Phe Arg Asp Ile 645 655

Leu Glu Leu Tyr Asp Trp Asn Leu Lys Gly Pro Leu Phe Glu Asp Ser 660 665

Pro Pro Cys Cys Pro Arg Phe His Phe Met Pro Arg Phe Val Arg Phe 675 680 685

Leu Pro Asp Gly Gly Lys Glu Val Leu Ser Met His Gln Ile Leu Leu 690 695 700

Tyr Leu Leu Arg Cys Ser Lys Ala Leu Val Pro Glu Glu Glu Ile Ala 705 710 715 720

Asn Met Leu Gln Trp Glu Glu Leu Glu Trp Gln Lys Tyr Ala Glu Glu 725 730 735

Cys Lys Gly Met Ile Val Thr Asn Pro Gly Thr Lys Pro Ser Ser Val 740 745 750

Arg Ile Asp Gln Leu Asp Arg Glu Gln Phe Asn Pro Asp Val Ile Thr 755 760 765

Phe Pro Ile Ile Val His Phe Gly Ile Arg Pro Ala Gln Leu Ser Tyr 770 775 780

Ala Gly Asp Pro Gln Tyr Gln Lys Leu Trp Lys Ser Tyr Val Lys Leu 785 790 795 800

Arg His Leu Leu Ala Asn Ser Pro Lys Val Lys Gln Thr Asp Lys Gln 805 810 815

Lys Leu Ala Gln Arg Glu Glu Ala Leu Gln Lys Ile Arg Gln Lys Asn 820 825 830

Thr Met Arg Arg Glu Val Thr Val Glu Leu Ser Ser Gln Gly Phe Trp 835 840 845

Lys Thr Gly Ile Arg Ser Asp Val Cys Gln His Ala Met Met Leu Pro 850 855 860

Val Leu Thr His His Ile Arg Tyr His Gln Cys Leu Met His Leu Asp 865 870 875 880

Lys Leu Ile Gly Tyr Thr Phe Gln Asp Arg Cys Leu Leu Gln Leu Ala 885 890 895

ISIS5030.ST25.txt

Met Thr His Pro Ser His His Leu Asn Phe Gly Met Asn Pro Asp His 900 905 910

Ala Arg Asn Ser Leu Ser Asn Cys Gly Ile Arg Gln Pro Lys Tyr Gly 915 920 925

Asp Arg Lys Val His His Met His Met Arg Lys Lys Gly Ile Asn Thr 930 935 940

Leu Ile Asn Ile Met Ser Arg Leu Gly Gln Asp Asp Pro Thr Pro Ser 945 950 955 960

Arg Ile Asn His Asn Glu Arg Leu Glu Phe Leu Gly Asp Ala Val Val 965 970 975

Glu Gly Gly Leu Ala Thr Tyr Arg Thr Ala Ile Val Gln As
n Gln His 995 1000 1005

Leu Ala Met Leu Ala Lys Lys Leu Glu Leu Asp Pro Phe Met Leu 1010 \$1015

Tyr Ala His Gly Pro Asp Leu Cys Arg Glu Ser Asp Leu Arg His $1025 \hspace{1.5cm} 1030 \hspace{1.5cm} 1035$

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Glu Gly Ser Leu Glu Glu Ala Lys Gln Leu Phe Gly Arg Leu Leu 1055 1060 1065

Phe Asn Asp Pro Asp Leu Arg Glu Val Trp Leu Asn Tyr Pro Leu 1070 1075 1080

His Pro Leu Gln Leu Gln Glu Pro Asn Thr Asp Arg Gln Leu Ile 1085 1090 1095

Glu Thr Ser Pro Val Leu Gln Lys Leu Thr Glu Phe Glu Glu Ala 1100 1105 1110

Ile Gly Val Ile Phe Thr His Val Arg Leu Leu Ala Arg Ala Phe 1115 \$1120\$ 1125

Thr Leu Arg Thr Val Gly Phe Asn His Leu Thr Leu Gly His Asn 1130 1140

Gln Arg Met Glu Phe Leu Gly Asp Ser Ile Met Gln Leu Val Ala 1145 1150 1155

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Lys Val Ala Glu Glu Leu Gly Met Gln Glu Tyr Ala Ile Thr Asn

Asp Lys Thr Lys Arg Pro Val Gly Leu Arg Thr Lys Thr Leu Ala 1205 1210 1215

Asp Leu Leu Glu Ser Phe Ile Ala Ala Leu Tyr Thr Asp Lys Asp 1225

Leu Glu Tyr Val His Thr Phe Met Asn Val Cys Phe Phe Pro Arg 1240

Leu Lys Glu Phe Ile Leu Asn Gln Asp Trp Asn Asp Pro Lys Ser 1250 1255 1260

Gln Leu Gln Gln Cys Cys Leu Thr Leu Arg Thr Glu Gly Lys Glu

Pro Asp Ile Pro Leu Tyr Lys Thr Leu Gln Thr Val Gly Pro Ser

His Ala Arg Thr Tyr Thr Val Ala Val Tyr Phe Lys Gly Glu Arg 1295 1300

Ile Gly Cys Gly Lys Gly Pro Ser Ile Gln Gln Ala Glu Met Gly 1315

Ala Ala Met Asp Ala Leu Glu Lys Tyr Asn Phe Pro Gln Met Ala

His Gln Lys Arg Phe Ile Gly Arg Lys Tyr Arg Gln Glu Leu Lys 1340 1345

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Thr Glu Asp Ile Lys Lys 1370

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Ile Val Ser His His Leu Tyr Phe Met Leu Thr His His Phe Glu Gly 35 40 45

Gly Leu Ala Thr Tyr Arg Thr Ala Leu Val Gln Asn Arg Asn Leu Ala 50 60

Thr Leu Ala Lys Asn Cys Arg Ile Asp Glu Met Leu Gln Tyr Ser His 65 70 75 80

Gly Ala Asp Leu Ile Asn Val Ala Glu Phe Lys His Ala Leu Ala Asn 85 90 95

Ala Phe Glu Ala Val Met Ala Ala Ile Tyr Leu Asp Gly Gly Leu Ala 100 \$105\$

Leu Lys Glu Lys Trp Asp His Ile Asn Glu His Glu Leu Lys Arg Glu 130 \$135\$

Asp Pro Gln Gly Asp Arg Asp Leu Ser Phe Ile Thr Pro Thr Leu Ser 145 $$ 150 $$ 150 $$ 155 $$ 160

Thr Phe His Ala Leu Glu Glu Arg Leu Gly Ile Gln Phe Asn Asn Ile 165 170 175

Arg Leu Leu Ala Lys Ala Phe Thr Arg Arg Asn Ile Pro Asn Asn Asp $180 \,$

Leu Thr Lys Gly His Asn Gln Arg Leu Glu Trp Leu Gly Asp Ser Val 195 200 205

Leu Gln Leu Ile Val Ser Asp Phe Leu Tyr Arg Arg Phe Pro Tyr His 210 215 220

His Glu Gly His Met Ser Leu Leu Arg Thr Ser Leu Val Ser Asn Gln 225 230 235 240

Thr Gln Ala Val Val Cys Asp Asp Leu Gly Phe Thr Glu Phe Val Ile 245 250 255

Lys Ala Pro Tyr Lys Thr Pro Glu Leu Lys Leu Lys Asp Lys Ala Asp 260 265 270

Leu Val Glu Ala Phe Ile Gly Ala Leu Tyr Val Asp Arg Gly Ile Glu 275 280 285

His Cys Arg Ala Phe Ile Arg Ile Val Phe Cys Pro Arg Leu Lys His Page 9

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Phe	Ile	Glu	Ser	Glu	Lys	Trp	Asn	Asp	Ala	Lys	Ser	His	Leu	Gln	Gln
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Trp Cys Leu Ala Met Arg Asp Pro Ser Ser Ser Glu Pro Asp Met Pro

Glu Tyr Arg Val Leu Gly Ile Glu Gly Pro Thr Asn Asn Arg Ile Phe

Lys Ile Ala Val Tyr Tyr Lys Gly Lys Arg Leu Ala Ser Ala Ala Glu 360

Ser Asn Val His Lys Ala Glu Leu Arg Val Ala Glu Leu Ala Leu Ala

Asn Leu Glu Ser Met Ser Phe Ser Lys Met Lys Ala Lys Asn Asn Ser

Asn Met Arg Arg Leu Glu Gln Asp Thr Ser Asp 405

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Ile Arg Lys Leu Met Phe Ala Met Lys Ala Leu Leu Glu Glu Thr Lys

His Ser Thr Lys Asp Asp Val Asn Leu Val Ile Pro Gly Ser Thr Trp

Ser His Ile Glu Gly Val Tyr Glu Met Leu Lys Ser Arg His Asp Arg

Gln Asn Glu Pro Val Ile Glu Glu Pro Ser Ser His Pro Lys Asn Gln

Lys Asn Gln Glu Asn Asn Glu Pro Thr Ser Glu Glu Phe Glu Glu Gly

Glu Tyr Pro Pro Pro Leu Pro Pro Leu Arg Ser Glu Lys Leu Lys Glu 130 135 140

Gln Val Phe Met His Ile Ser Arg Ala Tyr Glu Ile Tyr Pro Asn Gln 145 150 155 160

Leu Gly Asp Ser Phe Phe Asn Leu Phe Thr Thr Arg Ile Ile Phe Ser 180 185 190

Lys Phe Pro Gln Met Asp Glu Gly Ser Leu Ser Lys Leu Arg Ala Lys 195 200 205

Phe Val Gly Asn Glu Ser Ala Asp Lys Phe Ala Arg Leu Tyr Gly Phe 210 225 220

Asp Lys Thr Leu Val Let Ser Tyr Ser Ala Glu Lys Asp Gln Leu Arg 225 236 236

Lys Ser Gln Lys Val Ile Ala Asp Thr Phe Glu Ala Tyr Leu Gly Ala 245 250 255

Leu Ile Leu Asp Gly Gln Glu Glu Thr Ala Phe Gln Trp Val Ser Arg $260 \hspace{1.5cm} 265 \hspace{1.5cm} 270 \hspace{1.5cm}$

Leu Leu Gln Pro Lys Ile Ala Asn Ile Thr Val Gln Arg Pro Ile Asp 275 280 280

Lys Leu Ala Lys Ser Lys Leu Phe His Lys Tyr Ser Thr Leu Gly His 290 295 300

Ile Glu Tyr Arg Trp Pro Ala Cys Val Asp Gly Ala Gly Gly Ser Ala 305 315 320

Glu Gly Tyr Val Ile Ala Cys Ile Phe Asn Gly Lys Glu Val Ala Arg 325 330 335

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Val Ile Gln Leu Glu His Ala Val Thr Lys Leu Val Glu Ser Tyr Asn 50 60

Lys Ile Ile Glu Leu Ser Pro Asn Leu Val Ala Tyr Asn Glu Ala Val 65 70 75 80

Asn Asn Gln Asp Arg Val Pro Val Gln Ile Leu Pro Ser Leu Ser Arg 85 90 95

Tyr Gln Leu Lys Leu Ala Ala Glu Leu Lys Thr Leu His Asp Leu Lys $100 \hspace{1.5cm} 105 \hspace{1.5cm} 110 \hspace{1.5cm}$

Lys Asp Ala Ile Leu Thr Glu Ile Thr Asp Tyr Glu As
n Glu Phe Asp 115 120 125

Thr Glu Gln Lys Gln Pro Ile Leu Gln Glu Ile Ser Lys Ala Asp Met 130 \$140\$

Glu Lys Leu Glu Lys Leu Glu Gln Val Lys Arg Glu Lys Arg Glu Lys 145 $$ 150 $$ 155 $$ 160

Ile Asp Val Asn Val Tyr Glu Asn Leu Asn Glu Lys Glu Asp Glu Glu 165 $$ 170 $$ 175

Glu Asp Glu Gly Glu Asp Ser Tyr Asp Pro Thr Lys Ala Gly Asp Ile 180 185 190

Val Lys Ala Thr Lys Trp Pro Pro Lys Leu Pro Glu Ile Gln Asp Leu 195 200 205

Ala Ile Arg Ala Arg Val Phe Ile His Lys Ser Thr Ile Lys Asp Lys 210 215 220

Val Tyr Leu Ser Gly Ser Glu Met Ile Asn Ala His Asn Glu Arg Leu 225 230 235

Glu Phe Leu Gly Asp Ser Ile Leu Asn Ser Val Met Thr Leu Ile Ile 245 250 255

Tyr Asn Lys Phe Pro Asp Tyr Ser Glu Gly Gln Leu Ser Thr Leu Arg 260 265 270

Met Asn Leu Val Ser Asn Glu Gln Ile Lys Gln Trp Ser Ile Met Tyr 275 280 285

Asn Phe His Glu Lys Leu Lys Thr Asn Phe Asp Leu Lys Asp Glu Asn Page 12

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Ser Asn	Phe	Gln	Asn	Gly	Lys	Leu	Lys	Leu	Tyr	Ala	Asp	Val	Phe	Glu
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295

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Lys Ile Arg Lys Trp Leu Arg Lys Leu Ala Lys Pro Val Ile Glu Glu

Ala Thr Arg Asn Gln Val Ala Leu Glu Lys Thr Asp Lys Leu Asp Met 360

Asn Ala Lys Arg Gln Leu Tyr Ser Leu Ile Gly Tyr Ala Ser Leu Arg

Leu His Tyr Val Thr Val Lys Lys Pro Thr Ala Val Asp Pro Asn Ser

Ile Val Glu Cys Arg Val Gly Asp Gly Thr Val Leu Gly Thr Gly Val 405 410

Gly Arg Asn Ile Lys Ile Ala Gly Ile Arg Ala Ala Glu Asn Ala Leu

Arg Asp Lys Lys Met Leu Asp Phe Tyr Ala Lys Gln Arg Ala Ala Ile

Pro Arg Ser Glu Ser Val Leu Lys Asp Pro Ser Gln Lys Asn Lys Lys 455

Arg Lys Phe Ser Asp Thr Ser

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Ser Ser Lys His Asn Glu Arg Leu Glu Phe Leu Gly Asp Ser Ile Leu

Ser Tyr Val Ile Ala Asn Ala Leu Tyr His Arg Phe Pro Arg Val Asp 55

Glu Gly Asp Met Ser Arg Met Arg Ala Thr Leu Val Arg Gly Asn Thr 65 70 75

Leu Ala Glu Leu Ala Arg Glu Phe Glu Leu Gly Glu Cys Leu Arg Leu 85 90 95

Gly Pro Gly Glu Leu Lys Ser Gly Gly Phe Arg Arg Glu Ser Ile Leu $100 \hspace{1cm} 105 \hspace{1cm} 110 \hspace{1cm}$

Ala Asp Thr Val Glu Ala Leu Ile Gly Gly Val Phe Leu Asp Ser Asp 115 120 125

Asp Glu Ile Ser Pro Gly Asp Lys Gln Lys Asp Pro Lys Thr Arg Leu 145 15C 155 160

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Val Gln Val Arg Gly Glu Ala His Asp Gln Glu Phe Thr Ile His Cys 180 185 190

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